

Foreword

Many thanks for purchasing our refractor.

instrument function:measuring spherical's diopter,cylinder's diopter, axis of astigmatism and cornea curvature measurements (keratometry)(only for K).

This instrument's features are as follows:

- Can measure the eyes' diopter by a simple operation.
- Can measure the smaller pupil diameter, so the measurement range becomes wider.
- Automatic measurement can be faster while in the best condition

This manual fully describes the automatic refractor , including basic operation, failures, repair, maintenance and clearing.

In order to make better use of the instrument, please read the safety precautions.

Please save this manual.

Precautions

- Ensure that the instrument is in a controlled room temperature and normal humidity, atmospheric pressure (10 to 40 °C ,30-70% ,700-1060hpa) environments for using and preservation,

Avoid directly exposure to the sunlight.

- In order to ensure a smooth operation, do not put the instrument on a tilt or shaking ground. Do not place any object on the top of the instrument.
- Please ensure all the wires are properly connected before using.
- You must use the power supply of rated voltage.
- When the instrument is free, you should cut off the power and cover the lens and dust cover
- In order to obtain an accurate result, keep the detection window clear to avoid fingerprints, smudges and dust.

Using

- For the automatic refractor is a precision instrument, we recommend that used by a professional person.

Disclaimer:

- Don't be responsible for the damage of instrument due to fire, earthquake, or other acts of third party damage caused by an accident, or the user does not use the instrument in correct way.
- Don't be responsible for the business profit loss caused by the instrument.
- Don't be responsible for the damage that caused by the operation that not required by manual.
- Don't be responsible for the behaviour that use the instrument's data to be the final diagnostic data.

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Safety Alert

Basic Operation

- For avoiding the risk of electric shock please do not open the instrument cover, If any problem please call the professional technic person.
- Electric shock may cause burns or a fire. Before replacing the fuse please cut off the main power switch, and unplug the power cord. Can only replace with the same rated power fuses.
- In order to avoid potential harm in operation, do not use the instrument to touch the patient's glasses or nose.

Working Environment

Temperature: 10-40 degrees Celsius

Humidity: 40-80% (non-condensing)

Atmospheric pressure: 700-1060hpa

Storage, Use and Etc

1 This instrument can not be stored at temperatures above 40 ° C or below 10 ° C environment.

2 When store this instrument, to ensure that the following conditions::

- (1) The instrument can not be splashed by water.
- (2) Please store the instrument at the environment of suitable atmospheric pressure, temperature, humidity, ventilation, light, and amount of dust .
- (3) Do not move or store instrument on slope,unstable or shaking ground
- (4) Do not store the instrument in the vicinity of electronic equipment or chemicals and flammable gases..

The Packaging Environment Conditions During Transportation

Temperature: -10-60 degrees Celsius

Humidity :30-90%

Safety Alert

In order to ensure the safety use of instrument, to avoid damage to the operator, and in order to avoid causing damage to property, there are warnings in the manual, in the body too . We recommend that you properly understand the following text and the meaning of security identification, please read the instructions, may also read the instructions directly.

View

Mark	Meaning
 Warning	Incorrect handling or ignoring the warning could cause serious injury.
 Notice	Incorrect handling or ignoring this warning could cause serious injury or making damage to the facility..
	<ul style="list-style-type: none"> • Injury means injury, fire, electric shock, etc. • Damaged facilities means buildings, appliances and furniture are in damage.

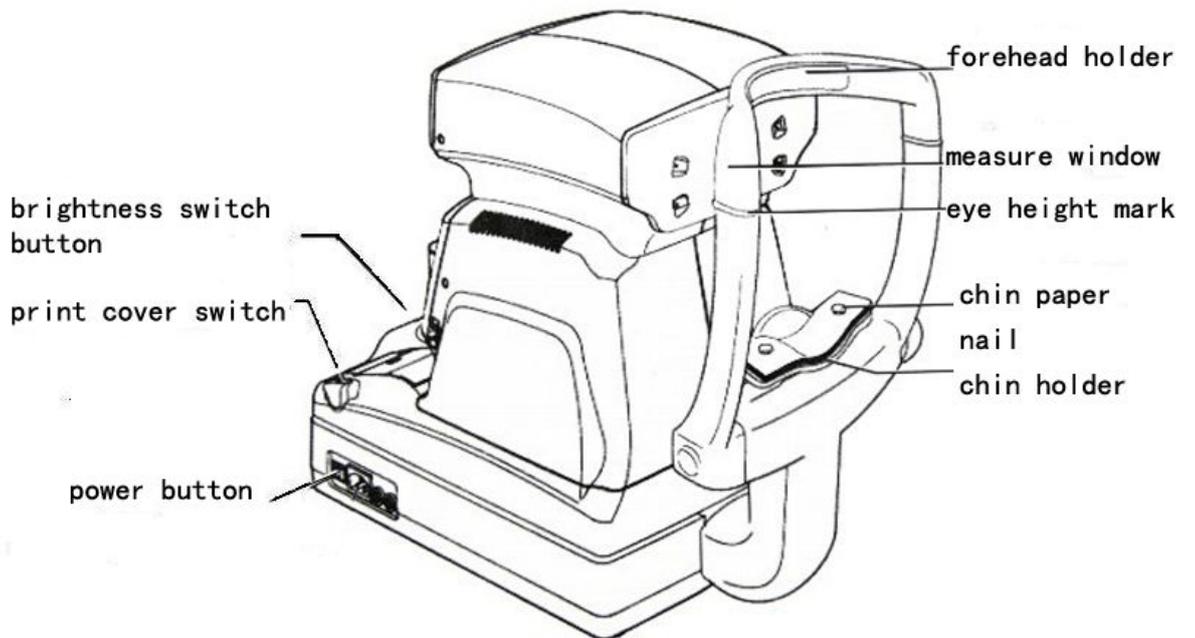
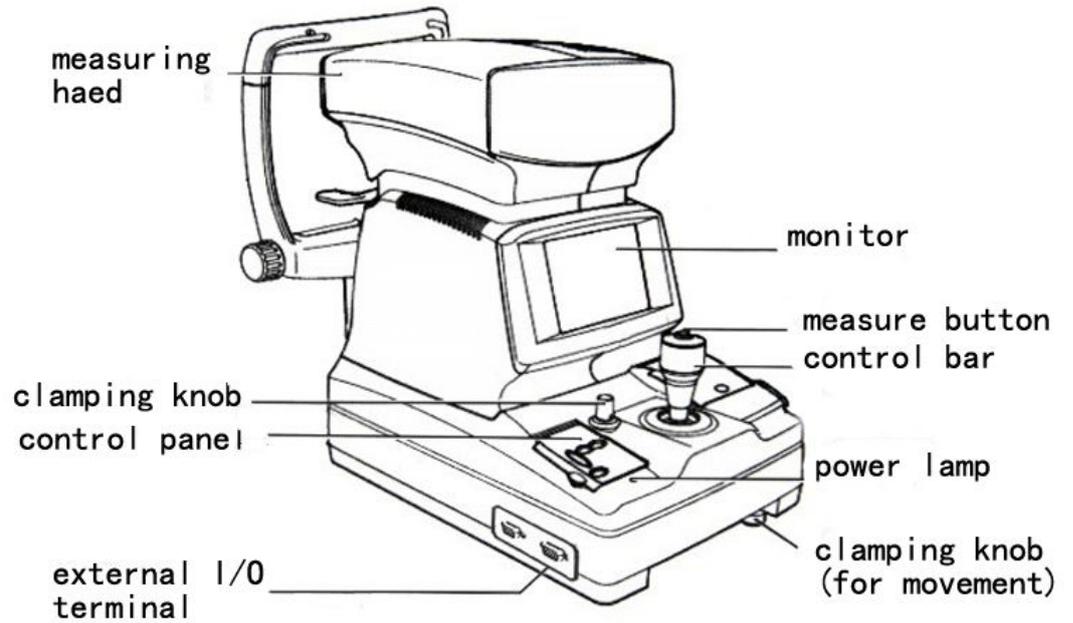
Meaning Of Marks

Mark	Meaning
	It means banned. Specific contents are close to the expression pattern of the text or icons.
	It refers to the necessary actions. Specific contents are close to the expression pattern of the text or icons.
	It means warning Specific contents are close to the expression pattern of the text or icons.

Mark	Safety Precautions (Warning / Caution)
	To avoid electrical shock, do not open the instrument, only qualified person can provide services.
	To avoid the risk of fire and electric shock, do not allow water or other external things into the instrument.
	To avoid electrical shock, do not put metal objects into the holes or cracks in the instrument.
	To avoid fire or electric shock, do not put glass or water / liquid container on the instrument.
	Short can cause a fire, turn off the power, unplug the plug before you replace the fuse. Replace the fuse as required.
	Some non-normal phenomena, such as smoke / odor, immediately turn off the power, unplug it. If the instrument is not used under normal conditions for long time may make result in fire, please ask your dealer for repair.

	To avoid potential injury, get the instrument in right way.
	To avoid electrical shock, do not plug the power with wet hands.
	To avoid potential injury, do not put your finger on the chin holder.
	To avoid potential injury or damage to the instrument, move instrument in slight way.
	When moving the instrument, should be two people lift the bottom. If one person lift the instrument, it may cause sprains or injured. If you do not lift the bottom of the instrument, but the other part, may put a finger injury, it may damage the instrument.

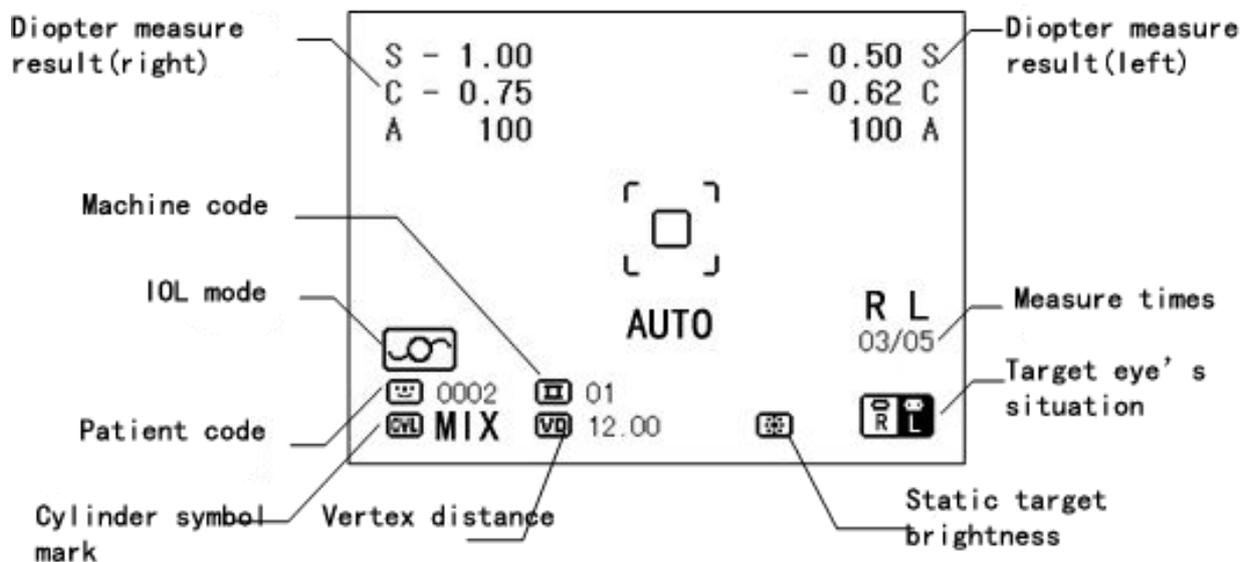
Body Parts



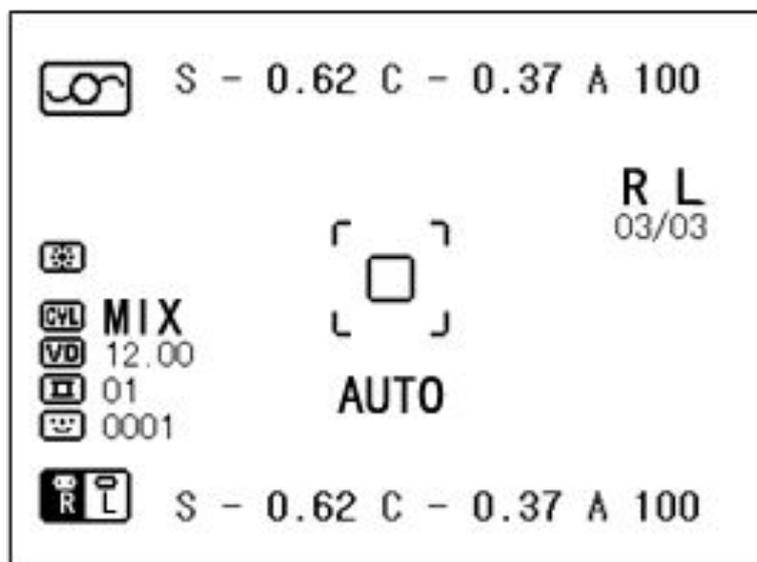
Screen display measurement

F

layout 1

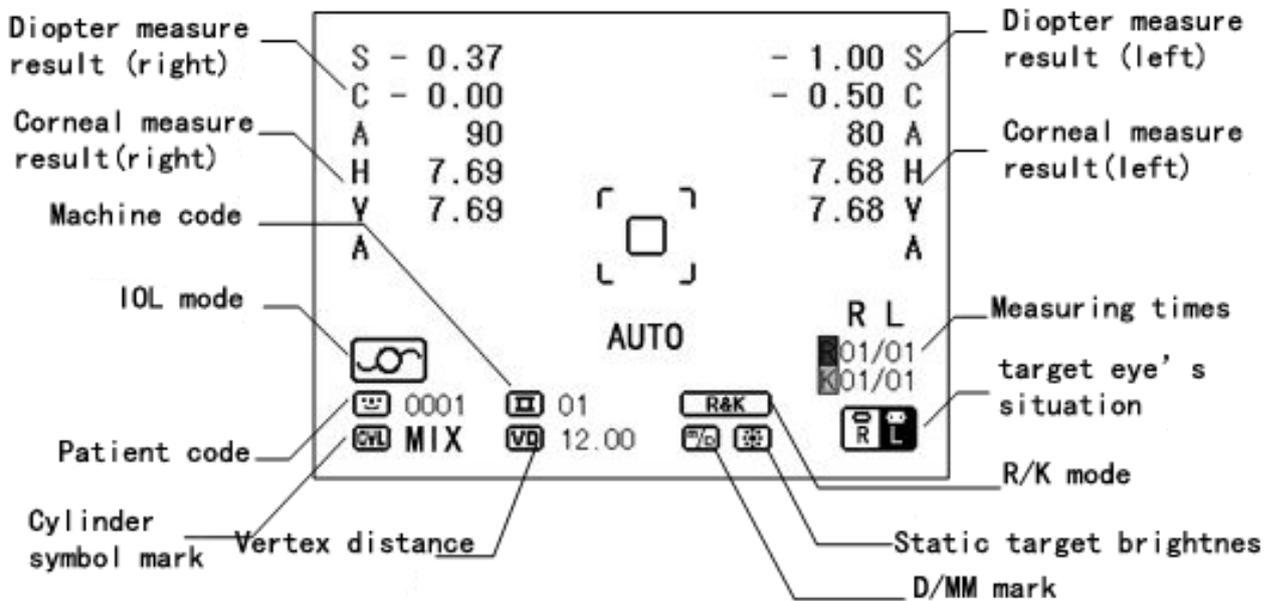


layout 2

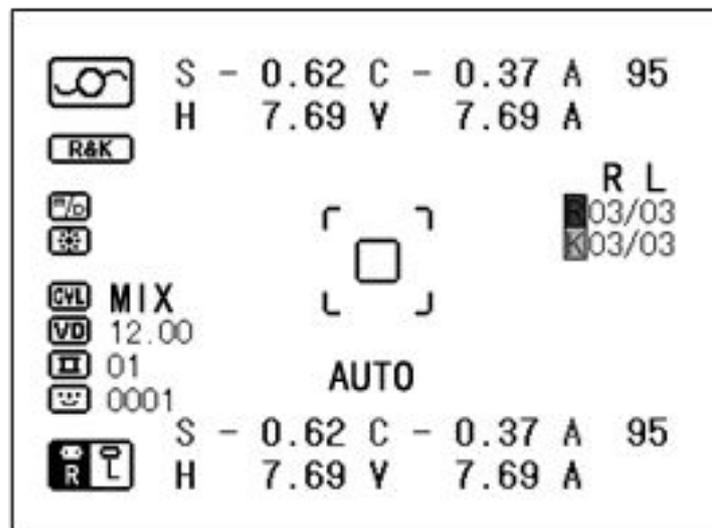


K

layout 1



layout 2



There are four measurement modes, press **【measurement mode switch】** in the measurement screen, the measurement modes can be switched in turn, are R & K mode, REF mode, KRT mode, CLBC mode.

R & K mode: measuring refraction and keratometry

REF mode: measuring diopter

KRT modes: measuring cornea curvature(keratometry)

CLBC Mode: contact lens base curve curvature measurement

Installation



NOTICE Before moving the instrument, tighten the lock switch at the bottom of the instrument, in order to prevent the instrument from moving, do not ignore this point, to prevent causing damage.

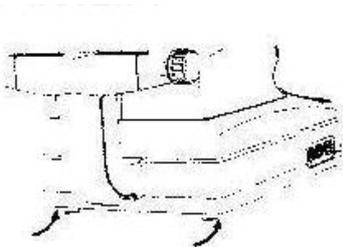


NOTICE If only one person lift, may cause arm pain or injury. If you can not lift the bottom, you may put a finger pinching, It can make you hurt.

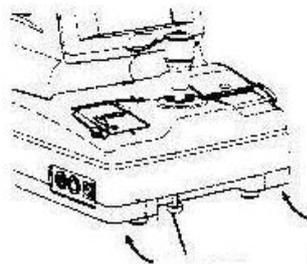


NOTICE To avoid accidents, please put the instrument on a stable place.

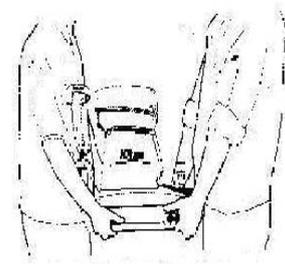
1. Tighten the lock switch.
2. Hold the instrument to put it on the workbench.



The part to hold



Lock switch



The way to lift

3. placed on the workbench, release the lock switch. Now the subject can be moved.
4. If the instrument is not fully horizontal, adjust the four screws, the adjustment range can not be more than 1cm.
5. Remove the rubber plug on the detection window.

Basic Operation

The preparatory work before the measurement

To avoid electrical shock, do not pull the plug with wet hands.

1. Make sure the power switch is in the (OFF) position.
2. Host plug in the power cord.
3. Plug the power cord into a grounded three-pin socket. If there is no grounding can cause fire or electric shock!
4. Turn on the power switch.
5. confirm screen appears normal.

The position of the person who be measured should be correct

1. Adjust the workbench or make a height to let the person feel comfortable.
2. Put the person's head on the chin holder. Forehead on the forehead holder.
3. adjust the chin holder height, make the person's canthus match the eye height mark.



4. Use control bar to adjust the instrument to target the person's eyes. Through horizontal / vertical adjustment to locate eyes in the focus box.

View history data



Control panel's **【data switch】** can view the last 10 times measurement data.
press **【measure switch】** return to the measurement screen.

REF	STEP	0.12	VD	12.00	CYL	MIX	
R/L	S	C	A	S	C	A	
1	- 0.62	- 0.37	95	- 0.62	- 0.37	80	
2	- 0.62	- 0.37	85	- 0.62	- 0.50	85	
3	- 0.62	- 0.50	90	- 0.62	- 0.50	85	
4	- 0.62	- 0.50	85	- 0.62	- 0.37	80	
5	- 0.62	- 0.37	85	- 0.62	- 0.50	80	
6	- 0.62	- 0.37	90	- 0.62	- 0.50	85	
7	- 0.50	- 0.62	95	- 0.62	- 0.50	75	
8	- 0.62	- 0.37	95	- 0.62	- 0.37	85	
9	- 0.62	- 0.37	90	- 0.62	- 0.50	80	
10	- 0.50	- 0.50	95	- 0.62	- 0.50	75	
AVE	- 0.62	- 0.50	90	- 0.62	- 0.50	80	
PD	65 mm						

KRT	STEP	0.05	MM/D	MM		
R/L	MM1	MM2	A1	MM1	MM2	A1
1	7.68	7.68		7.68	7.68	
2	7.68	7.68		7.69	7.69	
3	7.69	7.69		7.69	7.69	
4	7.68	7.68		7.69	7.69	
5	7.68	7.68		7.69	7.69	
6	7.69	7.69		7.69	7.69	
7	7.68	7.68		7.69	7.69	
8	7.68	7.68		7.69	7.69	
9	7.68	7.68		7.69	7.69	
10	7.69	7.69		7.68	7.68	
H/V	7.68	7.68		7.69	7.69	
AVE	7.68			7.69		
CD.	11.07 mm			11.07 mm		

Note: For K, **【measurement mode switch】** switches REF Data and KRT data,
REF mode **【cylinder symbol select switch】** Change cylinder symbol display, KRT mode
to change the curvature units.

Printout

F

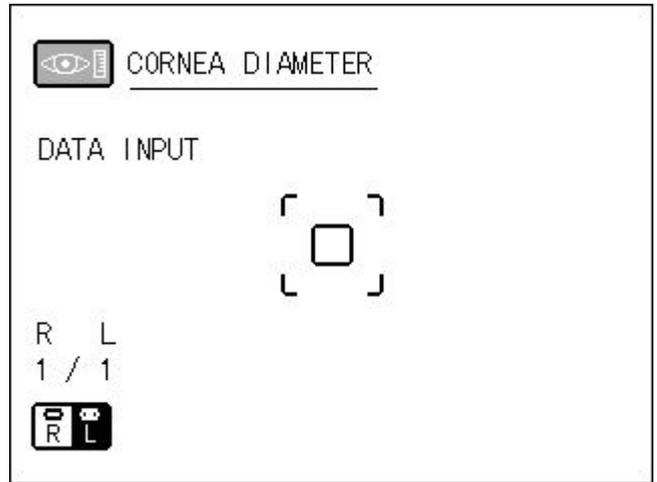
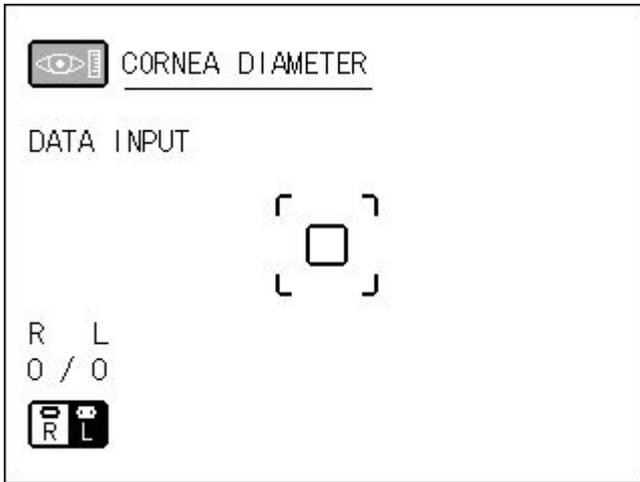
NAME:					Patient code
NO. 0001	01				Machine code
2013.11.12	AM	08:23			Vertex distance
FLO FKR-8900					Cylinder symbol
REF. DATA					Right eye diopter value for 2 times
VD: 12.00	CYL: MIX				Right eye diopter standard value
<R>	S	C	A		Right eye equal spherical degree
	- 0.50	- 1.25	90		
	- 0.50	- 1.25	90		
AVE	- 0.50	- 1.25	90		
	S. E.	- 1.12			
<L>	S	C	A		
	+ 0.50	- 1.25	120		
	+ 0.50	- 1.25	120		
AVE	+ 0.50	- 1.25	120		
	S. E.	- 0.12			
PD:66					Pupil distance
company:*****					
tel:*****					

cornea diameter measurement diagram (only K)



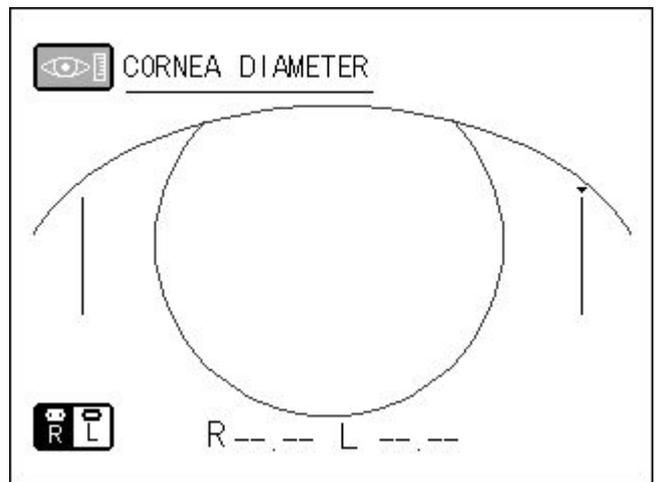
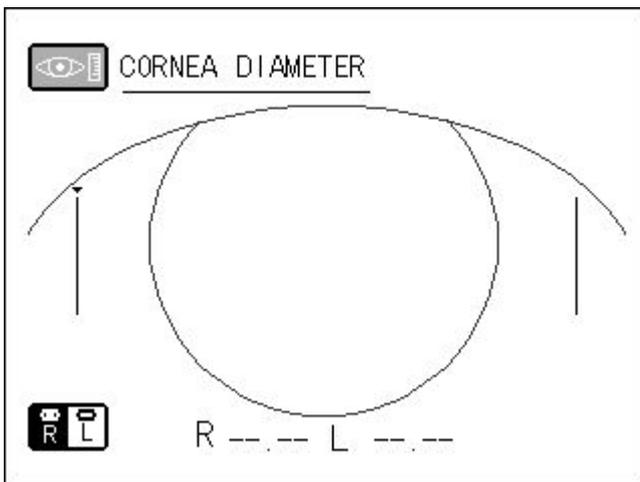
cornea diameter measurement pic1

cornea diameter measurement pic2



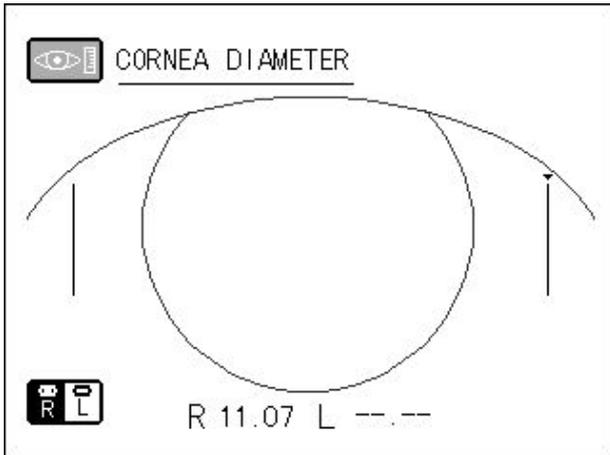
cornea diameter measurement pic3

cornea diameter measurement pic4

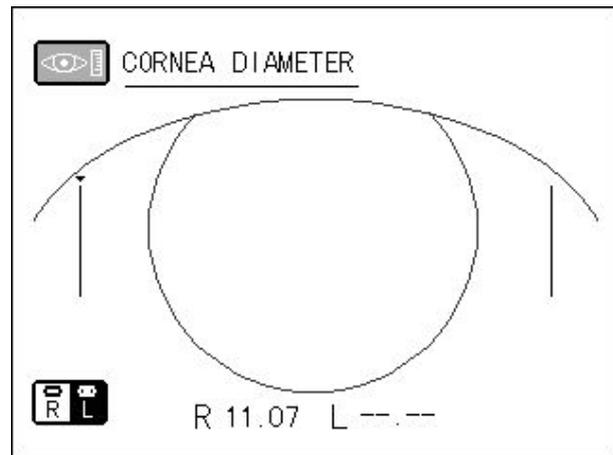


cornea diameter measurement pic5

cornea diameter measurement pic6



cornea diameter measurement pic7



cornea diameter measurement pic8

cornea diameter measurement methods: (C.D MEMORY measurement)

1. Open the Control Panel (Pic 1) .
2. Press **【 cornea diameter switch 】** (Pic 2) .
3. Screen jumps from the measurement interface to cornea diameter measurement interface (Pic 3) .
4. Make properly focus for cornea image , press the **【 measurement switch 】** , left and right eye images were recorded (Pic 4) , you can record several times , but only record the last image. While completed then press **【 cornea diameter switch 】** into the stored C.D MEMORYs measurement (Pic 5) .
5. Press **【 auto / manual switch 】** and video switch can move the left positioning ruler (Pic 5) .
6. Ensure the left positioning ruler's location , press **【 measurement switch 】** will switch the positioning marks to the right (Pic 6)
7. Using the same operation with step 5 can move the right positioning ruler's position (Pic 6)
8. Press **【 measurement switch 】** to complete the measurement. cornea curvature (keratometry) displayed in the lower part of the screen , as shown Right 11.07 (Pic 7) , so if you want to modify the positioning ruler's position , you can press **【 fixation target brightness switch 】** to switch boot mark , continue to adjust the positioning ruler's position, press measurement switch to refresh measurement data.
9. If single-eye measurement , repress the **【 test switch 】** to complete the test and return to the measurement screen , if it is both-eyes measurement , repress **【 cornea diameter switch 】** to switch to the other eye's cornea diameter measurement (Pic 8) .

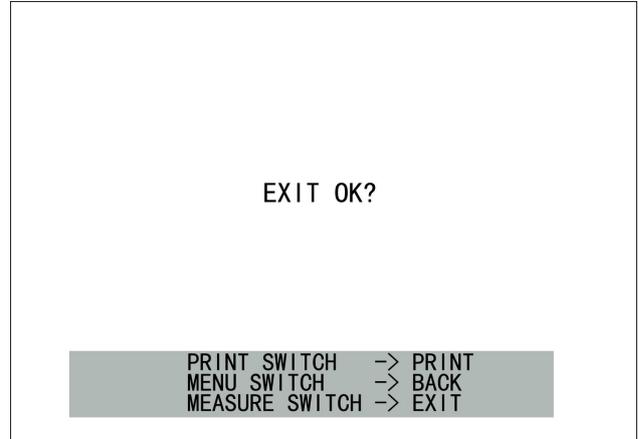
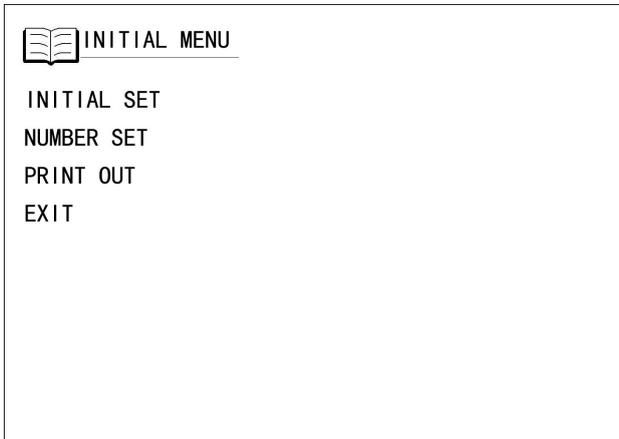
Note:

1 If selected non-C.D MEMORY measurement in the initial menu settings , measurement methods above the same, directly operate from step 5, left and right eye's switching through the head's movement , we recommend to select C.D MEMORYs measurement to obtain a more accurate value.

2 During the test , any time by pressing **【 print switch 】** will interrupt the test , return to the measurement interface.

Initial Setup Menu

Press **【menu switch】** while open the instrument, into initial menu screen.



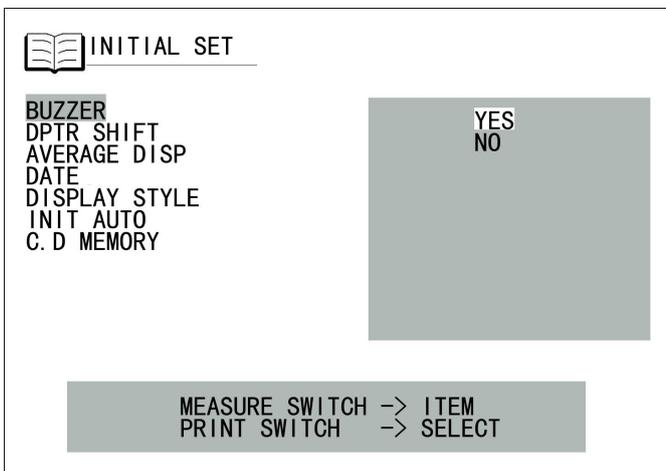
return to measurement screen

10. Press **【measurement switch】**, move the cursor to **EXIT**.
11. Press **【print switch】**. shows **EXIT OK?**
12. Press **【measurement switch】**. Return to measurement screen.

A: Open buzzer

buzzer can be set, factory-set to yes, open buzzer.

1. In “INITIAL MENU” screen, choose “INITIAL SET” item, press **【print switch】** into “INITIAL SET” screen.



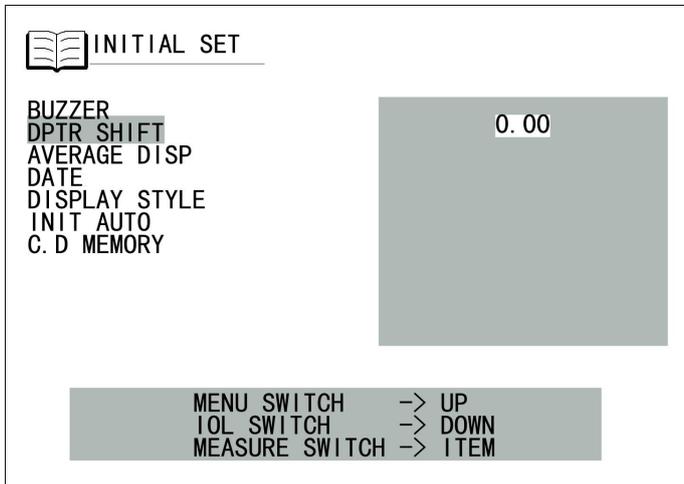
2. Press **【print switch】**, choose **YES** or **NO**
3. Press **【measurement switch】**, move the cursor to next item.

B: Diopter Compensation

Spherical degree (S) values can be corrected, factory-set to **0.00**

1. In “INITIAL MENU” screen, choose “INITIAL SET” item, press **【print switch】** into “INITIAL SET” screen. .

2 Press **【measurement switch】** move the cursor to “DPTR SHIFT” .



3. For correcting spherical value, press the menu switch to increase the correction value: **0 0.12 0.25 0.37 0.50 0.62 0.75 0.87 1.00** increase by degrees.

Press the IOL switch to decrease the correction value: **0 -0.12 -0.25 -0.37 -0.50 -0.62 -0.75 -0.87 -1.00** decrease by degrees.

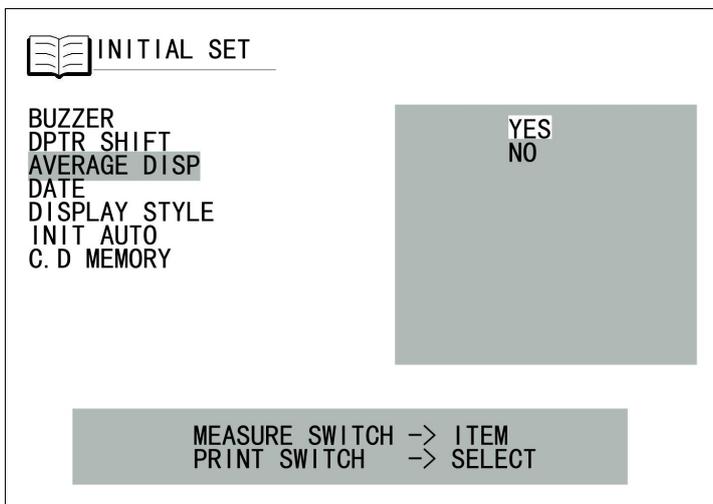
4 Press **【measurement switch】**, move the cursor to next item.

C: Display standard value

Standard values can be displayed on the screen, the factory setting is “Yes”

1. In “INITIAL MENU” screen, choose “INITIAL SET” item, press **【print switch】** into “INITIAL SET” screen.

2. Press **【measurement switch】**, move the cursor to “AVERAGE DISP”



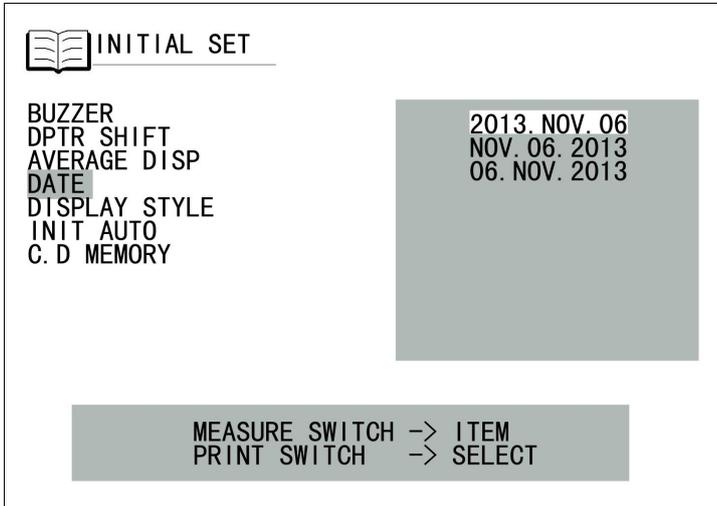
3 Press **【print switch】** , choose Yes or No

4 press **【measurement switch】**, move the cursor to next item.

D: Date format

Date print mode can be changed

1. In “INITIAL MENU” screen, choose “INITIAL SET” item, press **【print switch】** into “INITIAL SET” screen.
2. press **【measurement switch】**, move the cursor to “DATE”

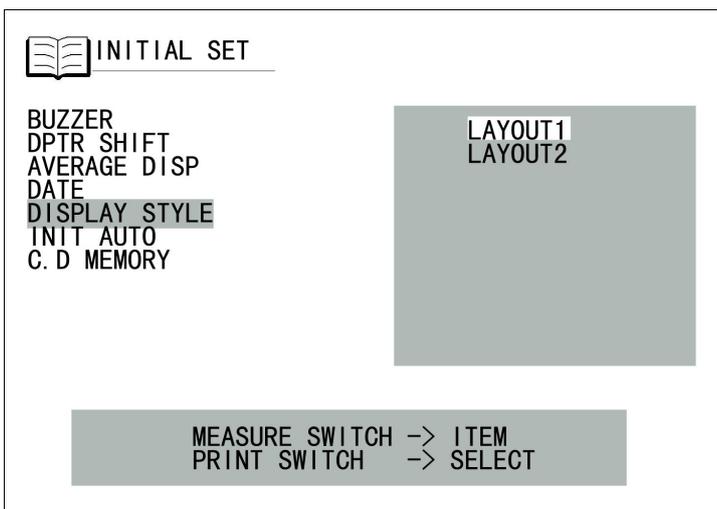


3. press **【print switch】**, choose the time format.
4. press **【measurement switch】**, move the cursor to next item.

E: Display layout

Can change the display mode. the factory setting is LAYOUT1.

1. In “INITIAL MENU” screen, choose “INITIAL SET” item, press **【print switch】** into “INITIAL SET” screen.
2. press **【measurement switch】**, move the cursor to “DISPLAY STYLE”



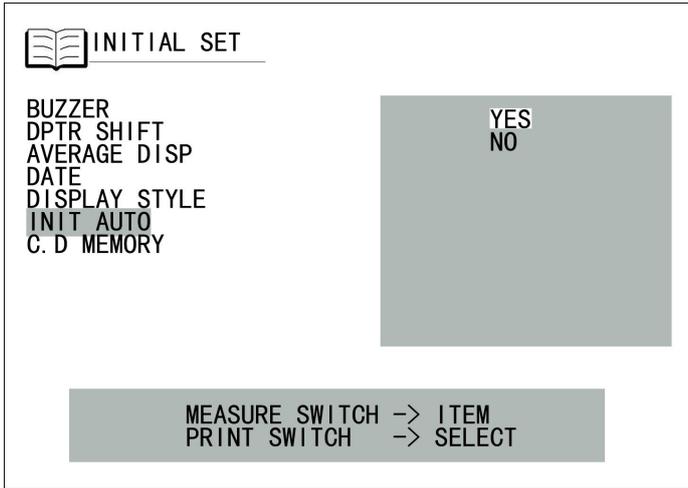
3. press **【print switch】**, choose LAYOUT1 或 LAYOUT2.
4. press **【measurement switch】**, settings done, move the cursor to next item.

F: Boot automatic measurement

Can change the measurement mode.the factory setting is **YES**

When the automatic measurement function is on, the focus frame capture the focus, the system automatically makes measurement.

1. In “INITIAL MENU” screen, choose “INITIAL SET” item, press **【print switch】** into “INITIAL SET” screen.
2. press **【measurement switch】**, move the cursor to “INIT AUTO”



3. press **【print switch】** ,choose **YES** or **NO**.
4. press **【measurement switch】**, settings done, move the cursor to next item.

Tip: the automatic measurement and automatic print function can do coordinate works.

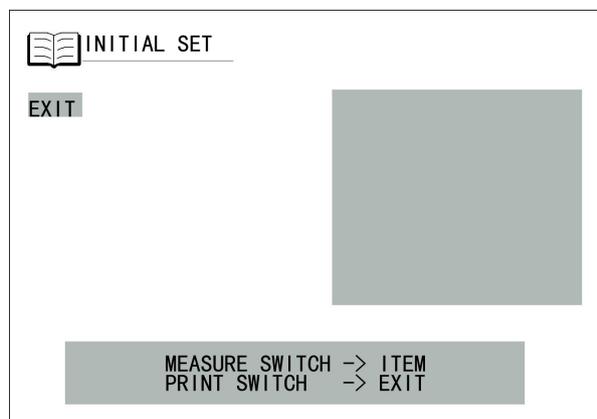
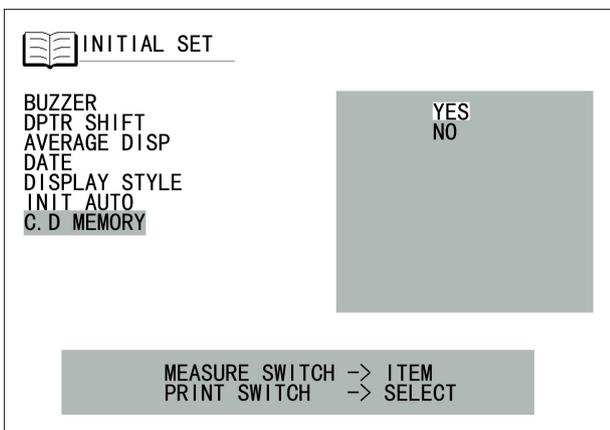
In the initial menu screen printing setting item, turn on automatic printing function.

After both eyes' measurement the system will automatically print measurement result, if only measure one eye or add a hand measurement during automatic measurement,the automatic printing function would not be activated.

G: C. D MEMORY measurement (Only K)

Can change the cornea curvature measurement mode.the factory setting is **YES**.

1. In “INITIAL MENU” screen, choose “INITIAL SET” item, press **【print switch】** into “INITIAL SET” screen.
2. press **【measurement switch】**, move the cursor to “C. D MEMORY”

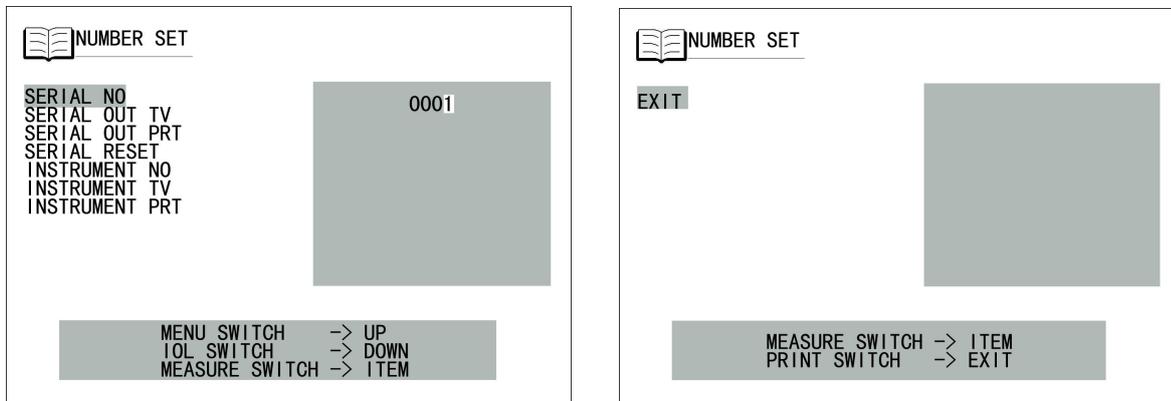


3. press **【print switch】** ,choose **YES** or **NO**.
4. press **【measurement switch】**, settings done, move the cursor to next item. screen jumps to next page, exit menu.
5. press **【print switch】** return to the previous menu.
6. For returning to measurement screen please check P12(return to the measurement screen).

NUMBER SET

In (NUMBER SET)screen, can set SERIAL NO.、SERIAL OUT TV、SERIAL OUT PRT、SERIAL RESET、INSTRUMENT NO.、INSTRUMENT TV、INSTRUMENT PRT.

1. In “INITIAL MENU” screen, press **【print switch】** move the cursor to “NUMBER SET” item.
2. press **【print switch】**, show “NUMBER SET” screen.



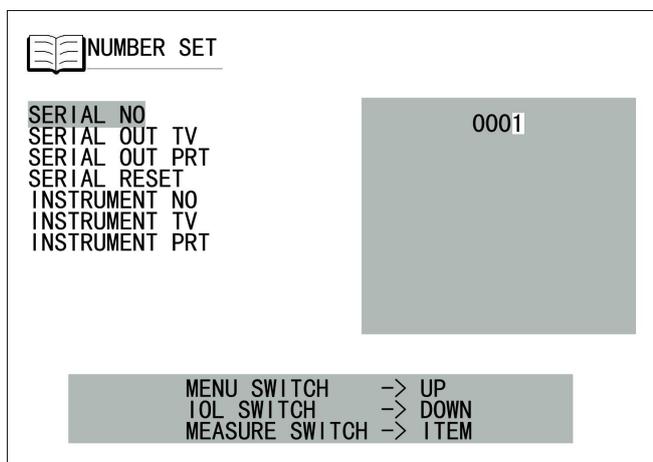
Return to initial menu screen

1. press **【measurement switch】**, move the cursor to **EXIT**.
2. press **【print switch】**.return to initial menu screen.

A: SERIAL NO.

Can set serial no from 0 to 0000.the factory setting is 0001

1. In “INITIAL MENU” screen, press **【print switch】** move the cursor to “NUMBER SET” item.
2. press **【print switch】**, into “NUMBER SET” screen.

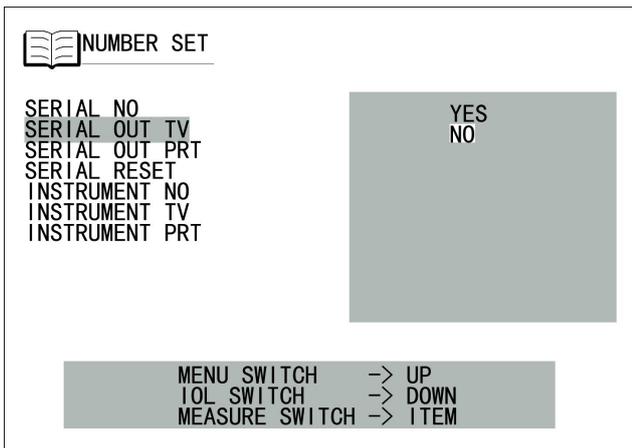


3. press **【menu switch】** increase this value, press **【IOL switch】** decrease this value.
4. press **【measurement switch】** move the cursor to next item.

B: SERIAL OUT TV

Can SERIAL OUT TV on the screen. the factory setting is **YES**.

1. In “**INITIAL MENU**” screen, choose “**NUMBER SET**” item, press **【print switch】** into “**NUMBER SET**” screen.
2. press **【measurement switch】**, move the cursor to “**SERIAL OUT TV**” .

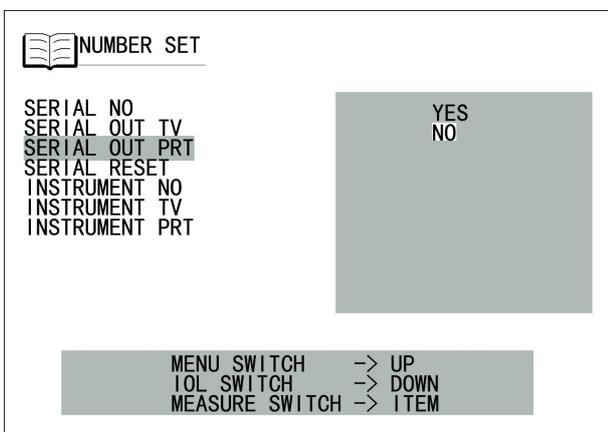


3. press **【print switch】** choose yes or no.
4. press **【measurement switch】**, move the cursor to next item.

C: SERIAL OUT PRT

Can SERIAL OUT PRT. the factory setting is **YES**.

1. In “**INITIAL MENU**” screen, choose “**NUMBER SET**” item, press **【print switch】** into “**NUMBER SET**” screen.
2. press **【measurement switch】**, move the cursor to “**SERIAL OUT PRT**”

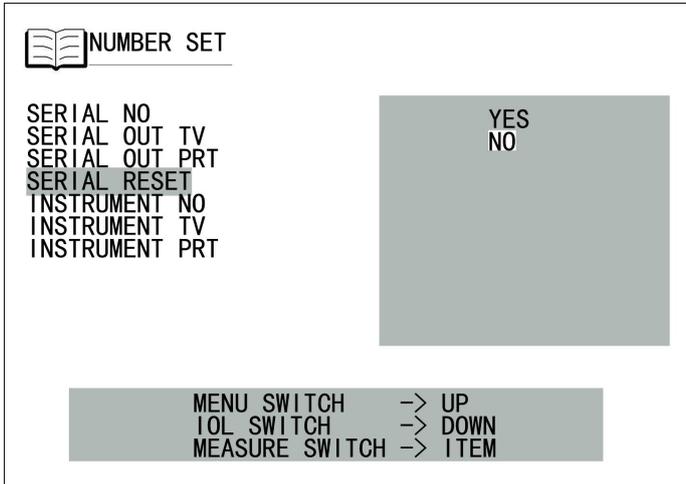


3. press **【print switch】** choose yes or no.
4. press **【measurement switch】**, move the cursor to next item.

D: SERIAL RESET

Can SERIAL RESET.the factory setting is NO.

1. In “INITIAL MENU” screen, choose “NUMBER SET” item, press **【print switch】** into “NUMBER SET” screen.
2. press **【measurement switch】**, move the cursor to “SERIAL RESET”

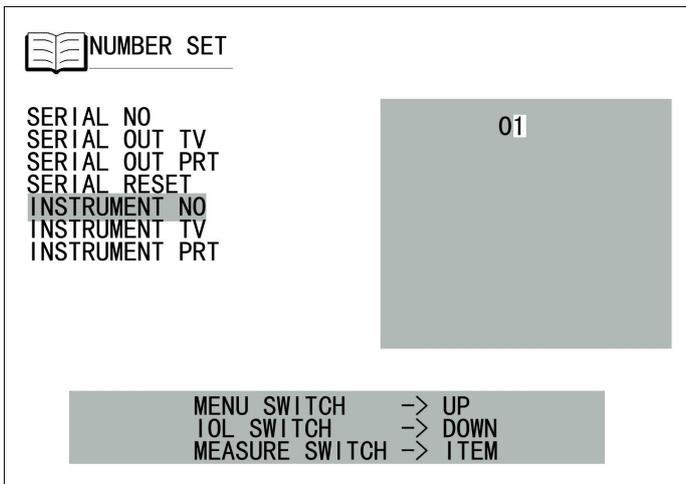


- 3.press **【print switch】** choose yes or no.
- 4.press **【measurement switch】**, move the cursor to next item.

E: INSTRUMENT NO.

Can set patients code between 0 and 99.the factory setting is 01

1. In “INITIAL MENU” screen, choose “NUMBER SET” item, press **【print switch】** into “NUMBER SET” screen.
2. press **【measurement switch】**, move the cursor to “INSTRUMENT NO.”

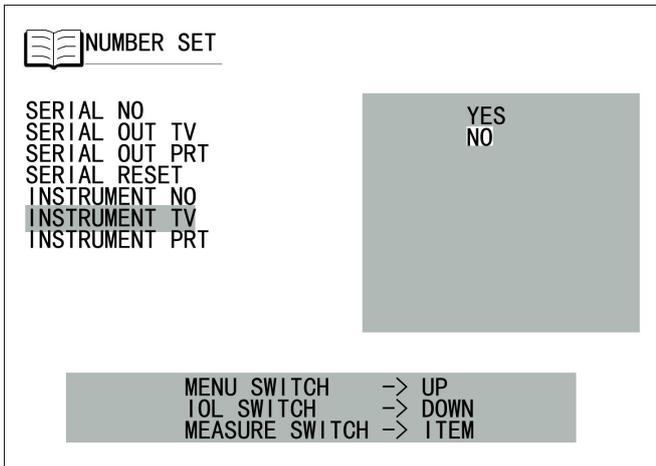


- 4.press **【menu switch】** increase this value, press **【IOL switch】** decrease this value.
- 5.press **【measurement switch】** move the cursor to next item.

F: INSTRUMENT TV

Can INSTRUMENT TV. the factory setting is NO.

1. In “INITIAL MENU” screen, choose “NUMBER SET” item, press **【print switch】** into “NUMBER SET” screen.
2. press **【measurement switch】**, move the cursor to “SERIAL OUT TV”

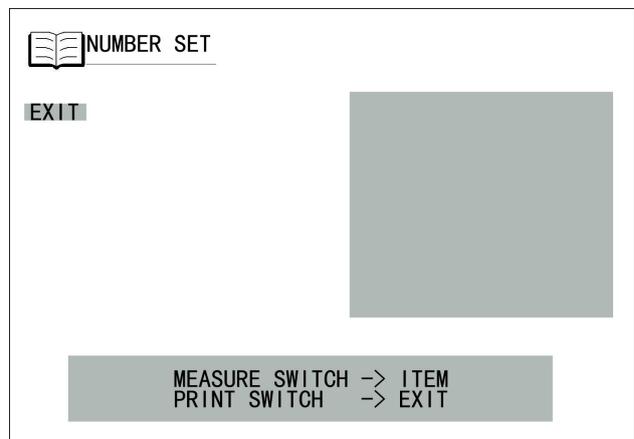
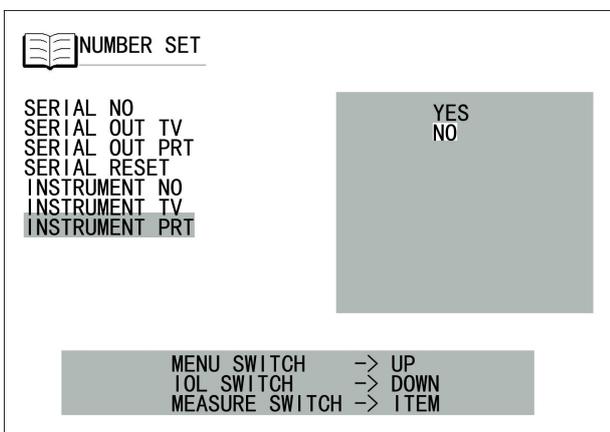


3. press **【print switch】** choose yes or no.
4. press **【measurement switch】**, move the cursor to next item.

G: INSTRUMENT PRT

Can INSTRUMENT PRT. the factory setting is NO.

1. In “INITIAL MENU” screen, choose “NUMBER SET” item, press **【print switch】** into “NUMBER SET” screen.
2. press **【measurement switch】**, move the cursor to “INSTRUMENT PRT”

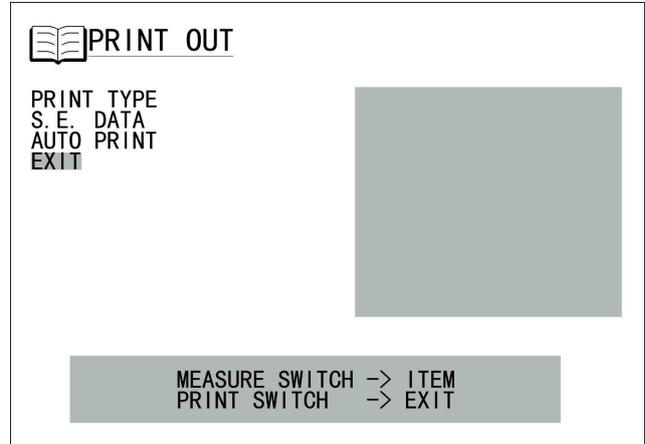
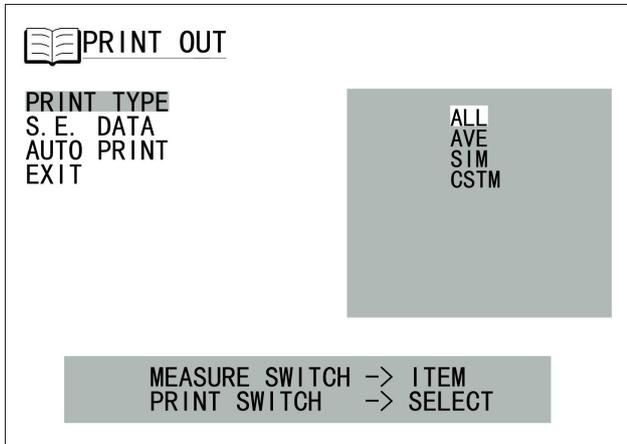


3. press **【print switch】** choose yes or no.
4. press **【measurement switch】**, move the cursor to next item or **EXIT NUMBER SET**.

PRINT OUT

In (PRINT OUT) screen, Can set PRINT TYPE、S. E. DATA、AUTO PRINT.

1. In “INITIAL MENU” screen, choose “PRINT OUT” item, press **【print switch】** into “PRINT OUT” screen.



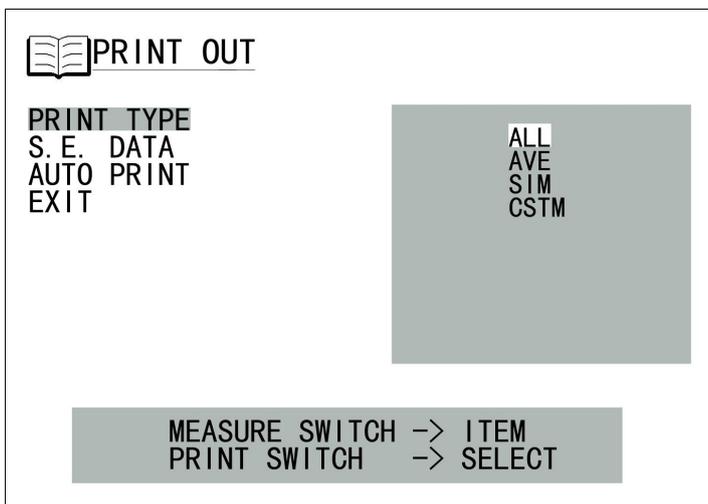
Return to INITIAL MENU screen

1. press **【measurement switch】**, move the cursor to **EXIT**.
2. press **【print switch】**. return to INITIAL MENU screen.

A: PRINT TYPE

Can set PRINT TYPE. the factory setting is **ALL**.

1. In “INITIAL MENU” screen, choose “PRINT OUT” item, press **【print switch】** into “PRINT OUT” screen.



2. press **【print switch】** choose:

- ALL print all data
- AVE only print date, setting and diopter' s standard value
- SIM only print standard value
- CSTM custom

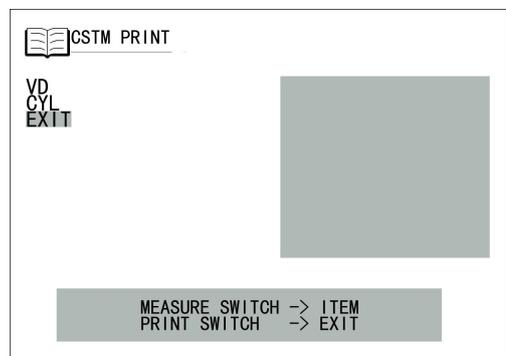
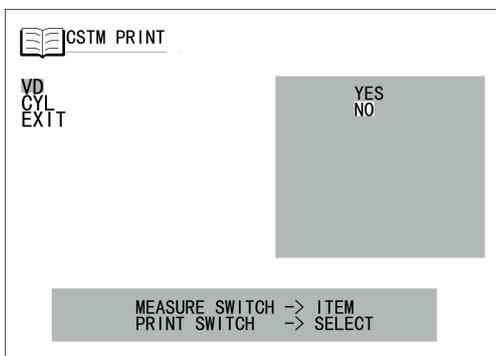
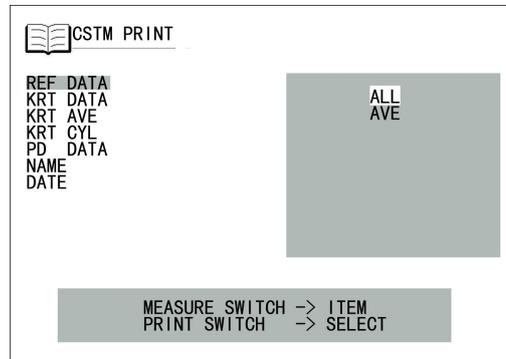
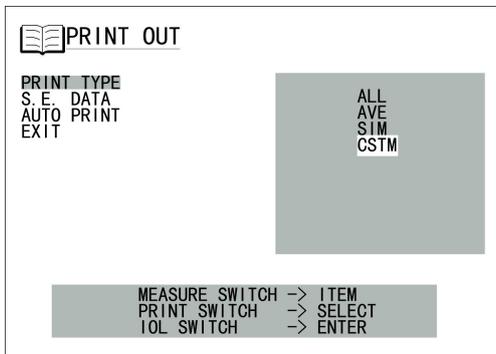
3. ess **【measurement switch】**, move the cursor to next item.

Custom print setting

In PRINT TYPE choose CSTM press IOL switch can into CSTM PRINT interface.

In this interface we can do: REF DATA, KRT DATA, KRT AVE, KRT CYL, (Only K)

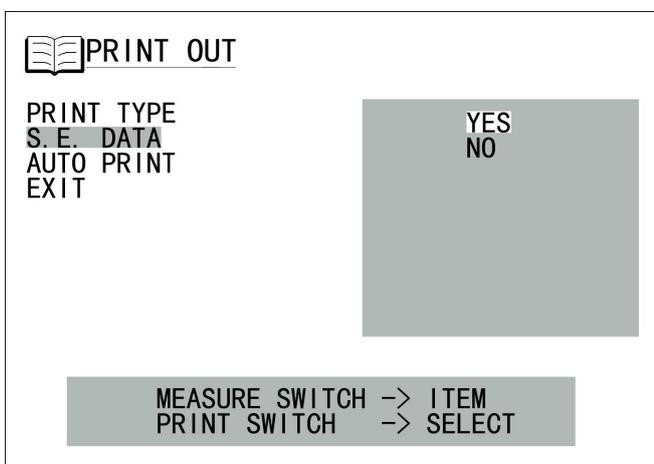
Make changes to PD DATA, NAME, DATE, VD, CYL items.



B: S. E. DATA

Can print equal spherical value.the factory setting is YES.

1. In “INITIAL MENU” screen, choose “PRINT OUT” item, press **【print switch】** into “NUMBER SET” screen.
2. press **【measurement switch】**, move the cursor to “S. E. DATA”



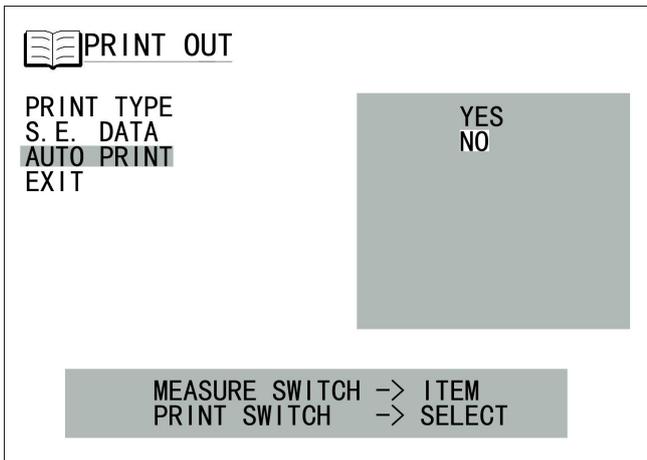
3. press **【print switch】** choose yes or no.

4. press **【measurement switch】**, move the cursor to next item.

C: AUTO PRINT

Can be auto. the factory setting is **YES**.

1. In “INITIAL MENU” screen, choose “PRINT OUT” item, press **【print switch】** into “NUMBER SET” screen.
2. press **【measurement switch】**, move the cursor to “AUTO PRINT”



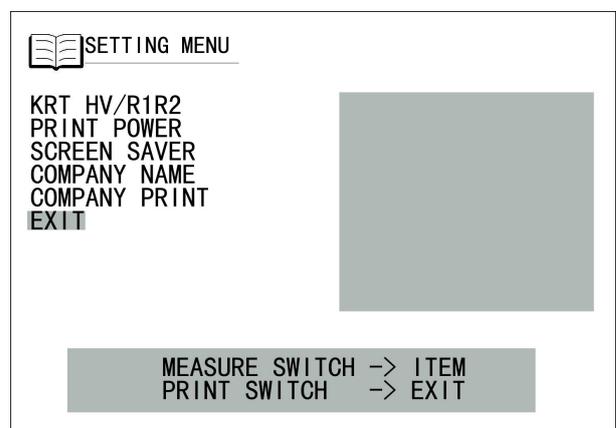
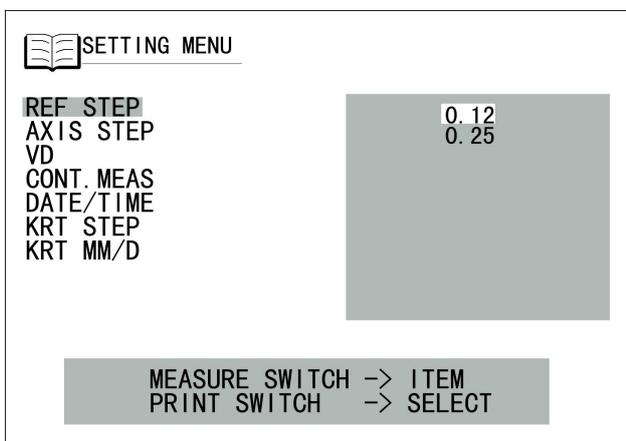
3. press **【print switch】** choose yes or no.
4. press **【measurement switch】**, move the cursor to next item **EXIT**.

SETTING MENU

In SETTING MENU can set REF STEP, AXIS STEP, VD, CONT. MEAS, DATE and TIME, KRT STEP, KRT MM/D, KRT HV/R1R2, PRINT POWER, SCREEN SAVER, COMPANY NAME, COMPANY PRINT.

Show menu screen

1. Confirm to be into measurement screen.
2. press control panel's **【menu switch】** into **SETTING MENU screen**.



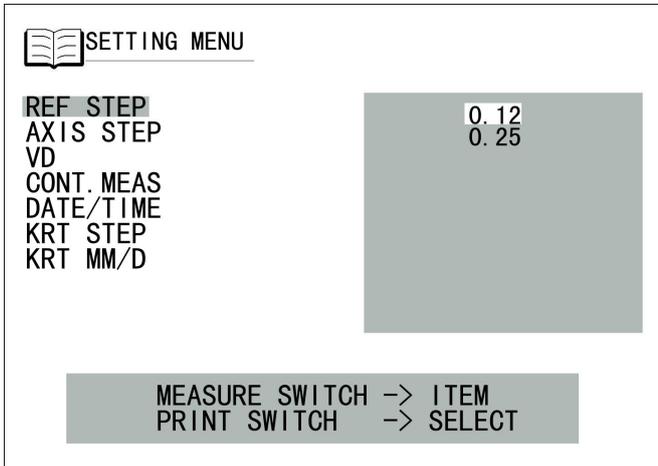
Return to measurement screen

1. press **【measurement switch】**, move the cursor to **EXIT**, press **【print switch】** return to measurement screen.

A: REF STEP

Can set the step from 0.12 to 0.25.the factory setting is 0.25.

1. Press control panel **【menu switch】** ,shows **SETTING MENU** screen.
Cursor In **REF STEP**,Step shows In right,the settled step is more clear.
2. press **【print switch】** ,target the cursor to the step that want to set.

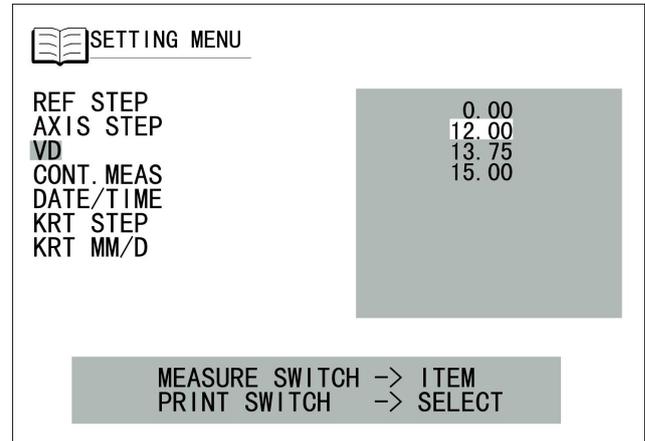
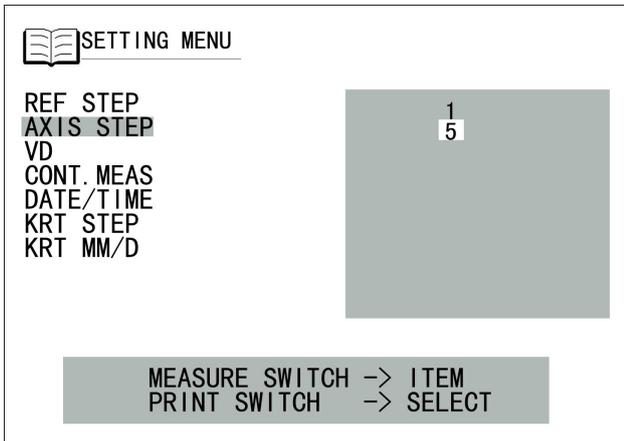


- 3.Press **【measurement switch】** ,settings done,move the cursor to next item **AXIS STEP**.

B: AXIS STEP

Can set the AXIS STEP in 1 or 5.the factory setting is 1.

1. Press control panel **【menu switch】** ,shows **SETTING MENU** screen.
2. press **【measurement switch】** ,target the cursor to **AXIS STEP**.
3. press **【print switch】** ,target the cursor to the value that want to choose.
4. press **【measurement switch】** ,settings done,move the cursor to next item **VD**.



C: Set Vertex distance(VD)

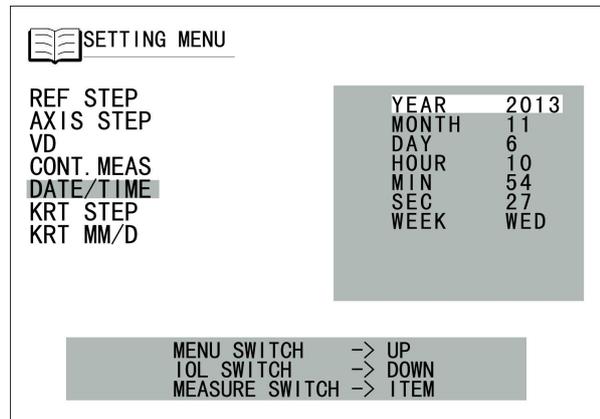
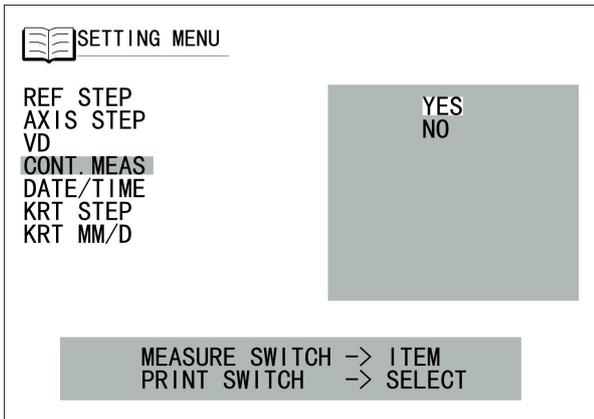
In VD setting,can choose contact lens(0)or glass lens (12mm or 13.75mm).the factory setting is glass lens(12mm).

1. Press control panel **【menu switch】** ,shows **SETTING MENU** screen .
2. Press **【measurement switch】** ,move the cursor to **VD** item.VD value in right.
- 3 Press **【print switch】** ,target the cursor to the VD value that want to choose.
4. Press **【measurement switch】** ,settings done,move the cursor to next item **CONT.MEAS**.

D: CONT.MEAS

Long press **【measurement switch】** the system can do **CONT.MEAS**.the factory setting is **YES**.

1. Press control panel **【menu switch】** ,shows **SETTING MENU** screen.
2. press **【measurement switch】** ,target the cursor to **CONT.MEAS**.
3. press **【print switch】** ,can choose yes or no.
4. press **【measurement switch】** ,settings done,move the cursor to next item **DATE/TIME**.

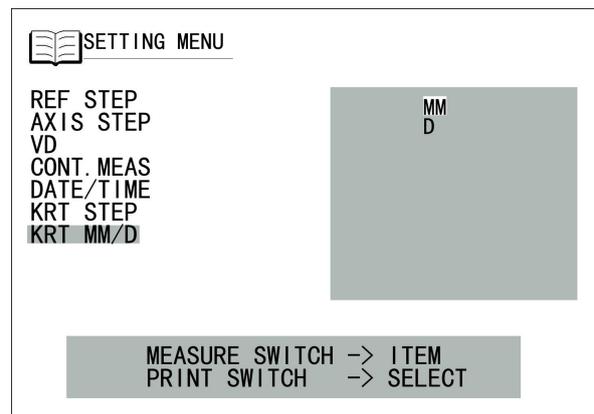
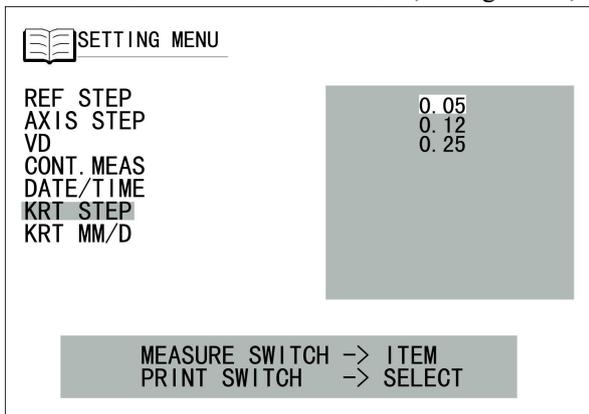


E: DATE/TIME

1. Press control panel **【menu switch】** ,shows **SETTING MENU** screen
2. Press **【measurement switch】** ,target the cursor to **DATE/TIME**.
3. Press **【print switch】** , target the cursor to the item want to choose.
4. Press **【menu switch】** ,increase this value,press **【IOL switch】** ,decrease this value.
5. press **【measurement switch】** ,settings done,move the cursor to next item.

F: KRT STEP(ONLY K)

1. Press control panel **【menu switch】** ,shows **SETTING MENU** screen
2. Press **【measurement switch】** ,target the cursor to **KRT STEP**.
3. Press **【print switch】** , target the cursor to the item want to choose.
4. Press **【measurement switch】** ,settings done,move the cursor to next item **KRT MM/D**.

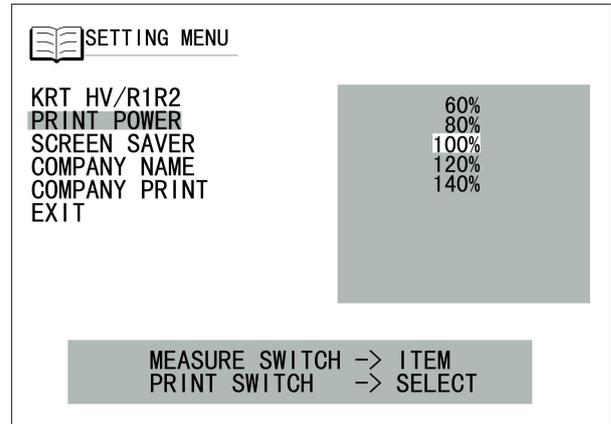
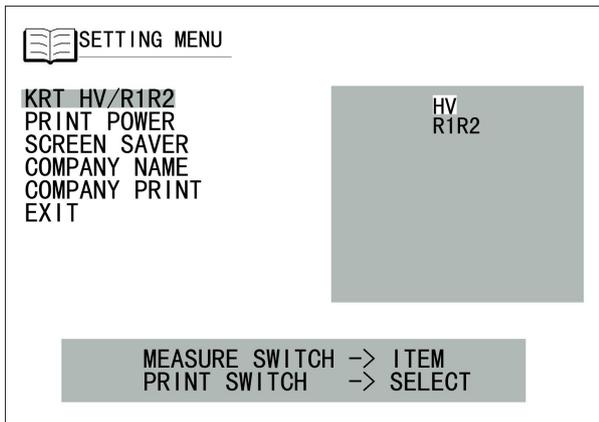


G: KRT MM/D(Only K)

1. Press control panel **【menu switch】** ,shows **SETTING MENU** screen
2. Press **【measurement switch】** ,target the cursor to **KRT MM/D**.
3. Press **【print switch】** , target the cursor to the item want to choose.
4. Press **【measurement switch】** ,settings done,move the cursor to next item **KRT HV/R1R2**.

H: KRT HV/R1R2(only K)

1. Press control panel **【menu switch】** ,shows **SETTING MENU** screen
- 2 Press **【measurement switch】** ,target cursor to **KRT HV/R1R2**.
3. Press **【print switch】** , target cursor to the item that want to choose..
4. Press **【measurement switch】** ,settings done,move the cursor to next item **PRINT POWER**.

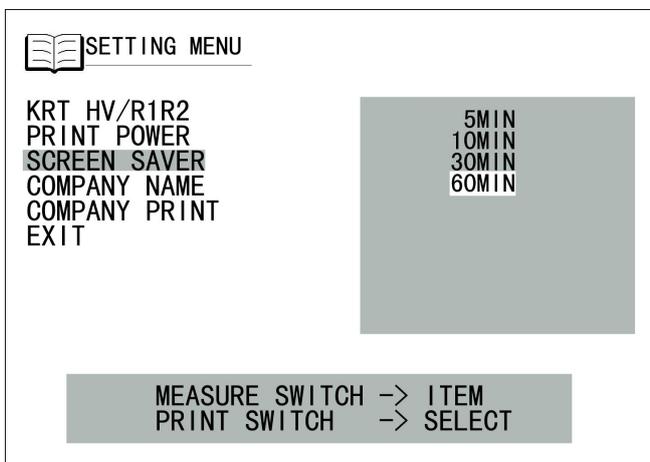


I: PRINT POWER

1. Press control panel **【menu switch】** ,shows **SETTING MENU** screen
- 2 press **【measurement switch】** ,target the cursor to **PRINT POWER**.
3. press **【print switch】** , target the cursor to the item want to choose.
4. press **【measurement switch】** ,settings done,move the cursor to next item **SCREEN SAVER**.

J: SCREEN SAVER

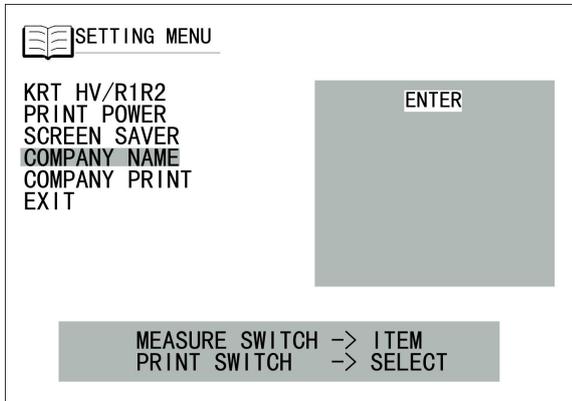
1. Press control panel **【menu switch】** ,shows **SETTING MENU** screen
- 2 .Press **【measurement switch】** ,target the cursor to **SCREEN SAVER**.
3. Press **【print switch】** , target the cursor to the item want to choose.



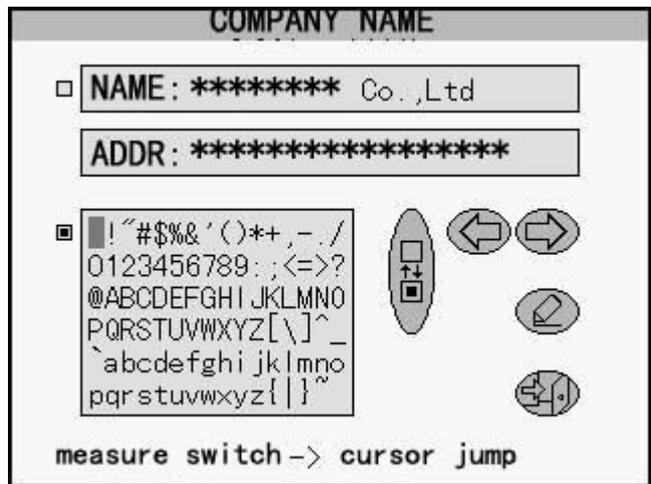
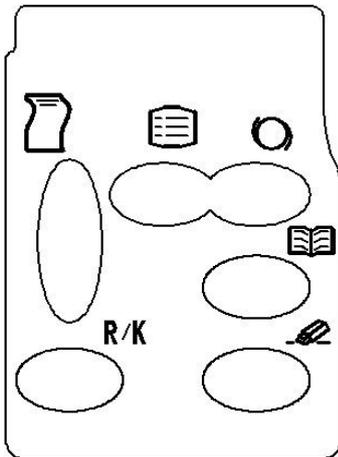
4. Press **【measurement switch】** ,settings done,move the cursor to next item **COMPANY NAME**.

K: COMPANY NAME

1. Press control panel **【menu switch】** ,shows **SETTING MENU** screen
2. press **【measurement switch】** ,move the cursor to **COMPANY NAME**.
3. press **【print switch】** into modify **COMPANY NAME** screen.



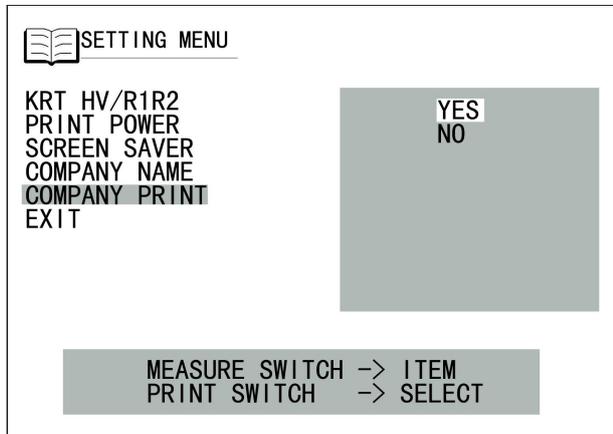
4. **COMPANY NAME** and Address's capacity of printing and set each are 22 characters, if your name, address are too long, please abbreviated to 22 characters.
 press **【print switch】** top and bottom that can switch the selected name column or article libraries.
 press **【menu switch】** can make the cursor moves left.
 press **【IOL switch】** can make the cursor moves right.
 press **【measurement switch】** can make cursor jumps up and down between lines.
 press **【Database switch】** Can enter the selected character.
 After setting press **【clear switch】** save and exit.
TIP: (In this screen,clear switch is for exit)



5. press **【measurement switch】** ,settings done,move the cursor to next item **COMPANY PRINT**.

L: COMPANY PRINT

1. Press control panel **【menu switch】** ,shows **SETTING MENU** screen
- 2 Press **【measurement switch】** ,target the cursor to **COMPANY PRINT**.
3. Press **【print switch】** , target the cursor to the item want to choose.



4. Press **【measurement switch】** ,settings done,move the cursor to next item or **EXIT**.

Paper Installation

- 1.Open printer cover
- 2.Remove the printer drive shaft
3. Install the new printer paper and pressure shaft

Note:

1. If print paper in the wrong direction that you can not print out the word.
- 2 shaft's white pinion's direction toward the left.
- 3 Paper must exceed shaft 5 ~ 6cm.
- 4, When printing,if paper edge has extrusion marks, or jams, please reposition the paper and shaft to adjust the paper's both sides' distance.
- 5 The printer cant be used if has a paper jam, continued use may damage the printer.
please open the printer cover, completely loosen the printer shaft,take out the jam paper.



Parameters and Performance

K Auto Refractor		
Measure mode	K&R mode	Diopter and keratometry measurements
	REF mode	Diopter measurement
	KRT mode	Keratometry measurement
	CLBC mode	Contact lens base curve curvature measurement
Diopter measurement	Vertex distance(VD)	0mm、12.0mm、13.75mm、15.0mm
	Spherical degree	-25.00~+22.00D(0.12/0.25D step)(VD=12mm)
	Axis	1°~180° (step 1°)
	Pupil range	45~85mm(accuracy 0.5mm)
	Minimum pupil diameter	Φ2.0mm
	Sight target	Auto fog chart
cornea measurement	Keratometry radius	5~10mm(0.01mm step)
	cornea diopter	33.00~67.00D(0.12/0.25D step)
	cornea astigmatism	0.00~-15.00D(0.12/0.25D step)
	Axis	1°~180°(step 1°)
	cornea diameter	2.0~12.00mm
Product Specifications	Monitor	5.7 inch TFT LCD monitor
	Inner printer	Imported Thermal Printer
	Saving mode	5/10/30/60minutes without operation automatically show screen savers
	Power supply	AC100~240V、50/60HZ
	Dimensions / Weight	275(W)*475(D)*435—465(H)mm/18kg

Standard accessories

1 Power cable	1
2 Chin paper positioning pin	2
3 Print paper	2 scrolls
4 lens cloth	1
5 Chin paper	1 stack
6 Dust cover	1
7 Fuse	2
8 rubber cork	1
9 Manual	1
10 simulate eye	1

Maintenance Notes

1. Regular inspect instrument and components.
2. To ensure the instrument's safety condition before restarting from a long term shutdown.
3. Make the measuring windows to avoid fingerprints, smudges and dust.
4. When the instrument is free, cover it with a dust cover.
5. When the measuring window is dirty, clear it with a dry cloth

Maintenance

Daily inspection

Check the measurement accuracy

- Measuring window's dust blow the dust with a blower.
- Measuring window's fingerprints and grease blow the dust with a blower, use a clear cloth dipped in clearer and gently wipe the surface.
- The instrument shell is dirty using the supplied soft cloth or dry cloth to wipe the surface. Should not use chemical solvents.
- clear components use a clear cloth dipped in warm water with neutral detergent to wipe chin holder and forehead holder.

Daily maintenance

- Dust can damage the instrument,so put on the rubber plug and dust cover when not use.
- Turn the power off when not use.

Checklist

 warning	To avoid electrical shock, do not open the instrument or repair by yourself. Repair works please find dealers.
 warning	To avoid electrical shock, do not disassemble the instrument's top, bottom, monitor and measuring head's cover.

If any malfunction,check the instrument follow the below checklist

If you take the following measures but the problem is still not solved, or checklist does not have that kind of problem, please contact your dealer or manufacturer.

Malfunction	situation	examine
Screen does not work	Power lamp not work Fuse broken after power on	Power plug plugged yet? instrument connects with the cable yet? Replace the fuse
Control bar not work		Don't be forced to move it,call repair person
Cant print	Paper comes out but no print Paper not come out	If the paper's direction correct? If paper is running out,replace the new paper

Replace the fuse

 warning	To avoid electrical shock, when replace the fuse, be sure to unplug the power plug, and then remove the fuse cover. when fuse cover is open, do not insert the power plug.
 warning	Be sure to use the specified fuse (3A). Use other types of fuses may cause a fire.

1. Turn off the power switch, unplug the power cable.
2. Use a screwdriver, gently press and rotate the fuse cover, remove it.
3. Replaced the old fuse with the supplied fuse.
4. Insert the fuse cover then using a flathead screwdriver to rotate clockwise, install done.

